A Survey of Montanans' Beliefs about Hunting, Viewing & Trapping

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A SURVEY OF MONTANANS' BELIEFS ABOUT HUNTING, VIEWING, AND TRAPPING

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Montana Fish, Wildlife and Parks

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ABSTRACT

Wildlife management agencies typically use public meetings and license-holder surveys to obtain public input. These techniques are effective in gathering comments from hunters, trappers, major landowners, and wildlife organizations but may preclude feedback from others. Given the interest in wildlife issues throughout Montana, Fish, Wildlife and Parks (MFWP) designed a study to sample all Montanans beliefs about wildlife-related recreation. MFWP began this survey by using focus groups to develop "belief statements". Interviewers then phoned randomly selected households, read these statements and associated questions, and noted responses. Respondents generally showed strong support for hunting and a high level of interest in wildlife viewing. They demonstrated little familiarity with trapping. Chi-square testing showed that beliefs, gender, and participation were often interrelated. Tests for nonresponse bias and comparisons to 1990 Census figures suggest that the survey did not achieve the objective of sampling Montana's overall population. The major difference between the sample and the population may be the sample's large proportion of hunters and viewers. The results contained herein could be used to develop wildlife management strategies focused on hunters and viewers and to describe the recreational environment in MFWP's environmental impact statement on its Wildlife Program.

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INTRODUCTION

Environmental Impact Statement for the Wildlife Program

In late 1991, Montana Fish, Wildlife and Parks (MFWP) decided to prepare an Environmental Impact Statement on its Wildlife Program. According to the 1994 workplan and project description (MFWP 1995), the main objective of the Programmatic EIS (PEIS) is to:

> Bring MFWP's Wildlife Program into compliance with the Montana Environmental Policy Act (MEPA) and provide program personnel with guidelines for project level MEPA compliance. The PEIS process is also an integral part of FWP's strategic planning.

Benefits and other objectives of the PEIS are to:

1) provide Montanans with an opportunity to participate in determining the direction of the Wildlife Program,
2) develop consensus on long-term goals and objectives for the Program,
3) identify obstacles that may interfere with implementing the Program,
4) establish an "umbrella document" that provides background information to apply to future management issues and federal aid documents,
5) inform MFWP's constituencies about scientific wildlife management, and
6) increase opportunities for wildlife recreation (hunting, trapping, and viewing).

During 1992 and 1993, MFWP gathered comments from the public that expressed concerns about wildlife management in Montana. Most comments came from meetings held in 14 cities distributed throughout Montana. Written comments were also received. A PEIS newsletter in early 1994 solicited additional comments. Just over 1300 comments were designated as relevant to the Wildlife Program and the PEIS. These comments were condensed into the following issues: 1) Access, 2) Recreational Opportunity, 3) Economics, 4) Regulations, 5) Surveys and Inventories, 6) Conservation Education, 7) FWP Funding and Accountability, 8) Introductions and Reintroductions of Wildlife, 9) Wildlife Diseases and Public Safety, 10) Coordination and Cooperation, 11) Multiple Use, 12) Nongame, including Threatened and Endangered (T&E) Species, and 13) Habitat.

MEPA rules (ARM 12.2.436 *et seq*) require that EISs describe current environmental conditions in the area that will be affected by a proposed action or alternatives to that action. Any future Wildlife Program will affect the entire state and will be treated as a proposed action or an alternative.

To fulfill MEPA requirements, MFWP has described much of the state in its preliminary draft PEIS. These descriptions include human demographics, economics, and wildlife resources. The proposed action and alternatives are being developed using a futuring method called Scenario Planning (Schwartz 1991).

Beliefs Survey

Characterizing Montana's recreational environment is an essential part of the affected environment section of the PEIS. To provide supporting information for this section, MFWP's Responsive Management Unit (RMU) investigated beliefs held by Montanans about hunting, wildlife viewing, and trapping. This document is based on the RMU's draft report (Dolsen 1994). In addition, some of the information could be incorporated into the 13 issues or used in developing the proposed action and alternatives.

People involved in wildlife-related recreation hold various thoughts or cognitions about their activities. Sociological researchers may attempt to classify these cognitions as attitudes, held values, motivations, satisfactions, and beliefs.

An attitude is an evaluation or feeling state held about an object or an idea. The best known method for measuring attitudes towards animals is the Kellert (1976) scale. Persons are placed into an attitudinal group based on how they respond to statements about wildlife. The eight Kellert attitudes are:

- Ecologistic - primary concern for the ecological characteristics of animals and natural habitats
- Aesthetic - interest in the physical attraction of animals
- Utilitarian-habitat - primary interest in the practical value of animal habitat
- Utilitarian-consumption - primary interest in the practical value of animals
- Negativistic - interest in avoiding animals
- Dominionistic - primary interest in controlling or mastering animals
- Moralistic - primary concern for right and wrong treatment of animals
- Naturalistic - primary concern with direct contact with animals in undisturbed, natural settings

MFWP (Dolsen 1993, pers. com.) defines a held value as a recurrent and guiding thought that resists change and a belief as an idea held about an activity based on perceived knowledge. A motivation is an expectation that efforts will lead to desired outcomes and a satisfaction is the difference between an expectation and an outcome. Figure 1 shows the relationship among the cognitive areas. Dolsen (1994) focused on beliefs area.

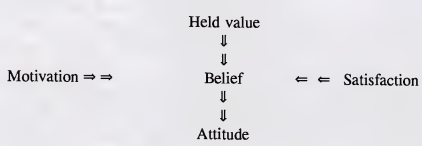


Figure 1. Relationships among cognitive areas.

Results

Earlier public surveys by wildlife management agencies in Montana, Colorado, and the nation provide a comparative background for Dolsen (1994) and this summary document.

Montana. In 1991, MFWP conducted a statewide telephone survey of 409 randomly selected adult Montanans (MFWP 1991). This survey gathered data on respondents including participation in wildlife-related recreation, Kellert attitudes, opinions about MFWP's wildlife management, and demographic characteristics.

Just under one-third (31%) of the sample hunted in the preceding year. Forty-nine percent of the men and 14 percent of the women hunted (Table 3). Men made up 78 percent of the hunters. About one-fourth (26%) of the sample viewed wildlife. Among the Kellert attitude groups, most respondents fell into the ecologistic or the aesthetic groups (Table 1). Of the three groups sampled, hunters had the greatest proportion in the dominionistic group.

Table 1. Kellert attitudes of 314 Montana respondents, 1991.

Kellert attitude	%		
	All	Hunters	Nonhunters
Ecologistic	38	40	37
Aesthetic	32	31	33
Utilitarian-habitat	12	9	13
Utilitarian-consumption	5	8	4
Negativistic	5	2	6
Dominionistic	4	10	1
Moralistic	3	1	4
Naturalistic	2	0	2

Source: MFWP 1991

[1] Due to rounding, not all column percentages total 100.

Most respondents (41% of 287) saw no change in MFWP's overall performance between 1986 and 1991. More saw improvement (34%) than decline (25%). Respondents also gave their opinions on how MFWP should allocate its wildlife management resources. The top areas for increased allocation were landowner assistance, education, and wildlife habitat (Table 2). Protecting and managing wildlife and increasing law enforcement were rated as MFWP's priorities for the early 1990s.

Several demographic parameters and membership in wildlife or recreation groups were significantly related to participation in hunting (Table 3). Table 4 shows the demographic descriptors for the entire sample of 409 Montanans.

Table 2. Resource allocation opinions of respondents on MFWP's wildlife management, 1991. Sample size ranged from 347 to 389.

Allocation	More (%)[1]	Same (%)	Less (%)
Assist landowners	56	34	11
Education	56	40	4
Wildlife habitat	54	39	8
Endangered species	48	43	9
Wildlife-livestock	46	40	14
Game law enforcement	45	49	7
Wildlife land	44	39	17
Youth activities	43	53	4
Wildlife-crop	43	44	13
Hunting access	41	42	18
Wildlife viewing	36	50	14
Wildlife hunting	36	53	11
Furbearer management	26	44	30

Source: MFWP 1991

[1] Due to rounding, not all row percentages total 100.

Colorado. In 1991, the Colorado Division of Wildlife mailed 6,000 questionnaires to randomly-selected Colorado residents (Standage Accureach 1991). The 55 percent response rate yielded 3,323 completed questionnaires with most items focusing on big game. With 95 percent confidence, 900 of the respondents represented Colorado's "general public" (as opposed to hunters, outfitters, or Division employees).

The survey found that 77 percent of Coloradans watched wildlife, 27 percent hunted, and 1 percent trapped. Sixty-six percent of the hunters also watched wildlife. Responses to survey items indicated how the state's population feels about wildlife (Table 5). Most (89% and 95%) believed that big game are important to the state's economy and general quality of life. Hunting as an activity was more positively viewed than were the actions and sensitivities of hunting participants. Concerns over habitat loss and poaching were seen as both threats to all wildlife and issues for big game management.

National. In 1991 and 1992, the US Census Bureau conducted a survey of adult wildlife users for the US Fish and Wildlife Service (US Fish and Wildlife Service and US Bureau of the Census 1993). The large starting sample size and the high response rate allowed for statistically reliable results for both the nation and the state.

Table 3. Significant chi-square relationships among the characteristics of Montana respondents and their participation in hunting and viewing, 1991. Sample size ranged from 390 to 399.

Characteristic	% hunting	% viewing
Age		
18-35 years	41[1]	--[2]
36-55 years	30	--
Over 55 years	21	--
State of origin		
Montana	36	--
Other	25	--
Gender		
Male	49	--
Female	14	--
Marital status		
Never married	36	--
Divorced	39	--
Employment status		
Full time	39	--
Group membership		
Wildlife group		
Member	53	35
Nonmember	25	23
Conservation group		
Member	--	40
Nonmember	--	23
Local recreation		
Member	55	40
Nonmember	28	24

Source: MFWP 1991

[1] p values for figures are 0.05, 0.01, or 0.001.

[2]Dashes (--) indicate no significant relationship ($p < 0.05$).

Table 4. Demographic characteristics of respondents in MFWP's 1991 survey. Sample size ranged from 359 to 395.

Characteristic	%[1]
Gender	
Male	51
Female	49
Age	
18-25 years	14
26-45 years	45
46-65 years	28
Over 65 years	13
Years of residence in Montana	
1-5 years	27
6-10 years	16
11-20 years	29
Over 21 years	28
Region of residence[2]	
West	57
Northeast	20
Southeast	23
Marital status	
Never married	15
Married	67
Divorced	11
Widowed	5
Separated	2
Education	
Not a high school graduate	5
High school graduate	55
Some college	11
College graduate	22
Post-graduate work or degree	7
Household income	
Less than $20,000	35
$20,000-$40,000	45
$40,000-$60,000	14
Over $60,000	8

Source: MFWP 1991
[1]Due to rounding, not all characteristic percentage total 100.
[2]Correspond to regions from Dolsen (1994). See Fig. 59.

Table 5. Responses of the Colorado public to statements about wildlife and wildlife management, 1991 (900 respondents).

Statement	% agreeing
Presence of big game adds to the quality of my life	95
Presence of big game is important to the economy	89
Legal hunting of big game is acceptable	85
Hunters are sensitive to animals	58
Hunters respect the environment	63
Threats to wildlife populations	
Predators killing big game	20
Habitat loss to human developments	90
Legal hunting	27
Poaching	83
Periodic severe weather (drouth, etc.)	67
Most important issues for big game management	
Protecting the species and their environment	11
Poaching	10
Too many animals in urban areas	10
Habitat loss	6
Access to public land (across private land)	6
Too many animals (in general)	3
Conflicts on private land	3
Damage to private land by animals	3
Not enough information	3

Source: Standage Accureach 1991

Wildlife users included hunters and those persons engaged in primary nonconsumptive uses like viewing, photographing, and feeding animals. Nonresidential users took trips of at least one mile for the express purpose of seeing wildlife. Persons classified as residential users stayed within one mile of home for the same activities and may also have maintained plantings for wildlife.

In 1991, nationwide participation in hunting (7%) was much lower than participation in Montana (26%). Men comprised 92 percent of the nation's hunters. Forty percent of the nation's adults participated in primary nonconsumptive uses of wildlife (Table 6). The participation rate rose to 52 percent in Montana with 31 percent classified as nonresidential and 47 percent as residential. Of the national users, about 51 percent were men and 49 percent were women.

Table 6. Participation rates of the US population in hunting and nonconsumptive wildlife uses, 1991-1992.

Characteristic		% of US population participating	
		Hunting	Nonconsumptive uses
Overall		7	40
Type of Use:	Nonresidential	NA[1]	16
	Residential	NA	39
Gender:	Men	14	18/40[2]
	Women	1	14/38
Age:	16-34 years	28	49/95
	35-54 years	17	36/85
	Over 55 years	9	20/82

Source: US Fish and Wildlife Service and US Census Bureau 1993
[1] Not Applicable
[2] First figure is nonresidential; second figure is residential (see text).

Methods

Three other studies provided insights into methods for conducting public surveys.

1) Salant and Dillman (1994) suggested evaluating overall confidence in public surveys by considering all factors below:

   a) Response rate. Generally, a rate of 60-70 percent is considered adequate.
   b) Sample frame. A nonresponse bias (see below) can occur if nonrespondents are different from respondents in ways that relate to the study.
   c) Quality of the survey questions. The questions should be objective and understandable.
   d) Total survey number. Large samples can decrease sampling error.

   They summarized nonresponse bias as error that occurs when:

   a) a substantial number of people in the interview sample cannot be reached or refuse to participate and
   b) these nonrespondents differ from respondents in a way pertaining to the study focus.

2) Boxall and McFarlane (1993) examined the aspects of advertising and nonconsumptive recreation using human dimensions information from Christmas Bird Counts. Three

weeks after mailing the full questionnaire, they mailed another questionnaire to the nonrespondents. This brief questionnaire contained only items regarding age, education, years of birding experience, value of birding equipment, and level of expertise. Responses between respondents and nonrespondents varied significantly on only one item (value of equipment) in one of the two cities surveyed. The researchers, therefore, assumed that there was no nonresponse bias.

3) Duffield et al. (1994) used a mail survey to estimate the value of preserving instream flows in Montana rivers. The 34 percent response to 1850 questionnaires suggested the need for a nonresponse survey. A telephone survey asked the 251 nonrespondents 13 of the 39 questions that were on the mailed questionnaire. Nearly 100 percent of the nonrespondents cooperated with the phone survey. Nonrespondents differed from respondents in several ways; however, only one was relevant to study objectives. Participants in river recreation were more likely to respond to the mail survey. Since participants are more willing than nonparticipants to contribute to river preservation, a potential bias was noted in using mail survey-based valuation models.

After noting that their sample was nonrandom, the researchers compared it to the Montana population, according to the 1980 census. The sample contained 38 percent more men than women; however, the census ratio was even. The sampling method and the greater participation of men in river recreation created the unbalanced gender ratio. The sample also contained older and more educated people than did the census population.

METHODS

Survey of Montana Residents

Focus Groups. Focus groups are commonly used in business and politics to help identify marketing strategies or issues. Initially, MFWP contacted randomly-selected people from telephone books. The interviewer then asked several questions to determine the person's background. MFWP sought people that would represent the following interests: hunting, wildlife viewing, commercial uses of wildlife, and agriculture. Some organized interest groups were contacted in an attempt to insure a diverse participation. MFWP offered a video or magazine subscription as an incentive to attend the sessions.

MFWP used consultants to conduct the focus group sessions and report on the results (Clancy and Floyd 1993). In June of 1993, the consultants led sessions in Billings, Glendive, Butte, Missoula, Kalispell, and Great Falls. Attendance ranged from 8 to 18 for a total of 63 participants. Unfortunately, the groups were not as diverse as desired. Seventy-three percent were men; many interested in hunting or trapping. Some represented special interest groups, such as the Wildlife Federation or the Stock Growers Association, and knew more than expected about the Wildlife Program. All watched wildlife, although much of the watching was incidental to other activities.

Clancy and Floyd (1993) noted that focus groups rarely provide a statistically valid representations of populations. Nonetheless, in this case, the group members provided useful information on how they used wildlife-related recreation and how they viewed MFWP's management of that recreation. The consultants supplied the RMU with original comments and concluding statements for each of the three recreational activities.

Belief Statements and Interviews. The RMU used Clancy and Floyd (1993) to develop "belief statements" for each of the three recreational activities of hunting, viewing, and trapping (Appendix B). It added questions to determine participation in the activities as well as demographic, social, and economic attributes. The RMU pretested a 74-item questionnaire by making 39 phone contacts. Where necessary, the questionnaire was modified.

Survey Sampling, Inc. supplied randomly selected telephone numbers for 2,000 Montana households. County populations were considered to proportionally distribute the sample throughout the state. Interviewers telephoned sample members from December 1 through December 19.

After making initial contact, interviewers asked for the adult (18 years and over) in the household with the most recent birthday. This approach attempted to approximate the balanced gender ratio shown by the 1990 Census.

If the contacted person did not want to take part in the full 15-30 minute interview, the interviewer offered a short, 9-item interview. These 9 items (Figs. 65-72), a subset of the full questionnaire, were used to investigate nonresponse bias.

Interviewers contacted 985 people of which 53 percent (519 people) agreed to complete the full interview. Twenty-nine percent (283 people) took the short interview. The first group were designated "respondents" while the second group represented "nonrespondents". Interviewers placed responses in categories and the RMU converted the responses to percentages. Nineteen percent (183 people) turned down both interviews and could not be included in the sample or the testing (below).

Because the sample contained an unequal gender ratio (page 47), the RMU weighted the sample to reflect the 1990 Census ratio. This weighted sample is used throughout this report except for the chi-square analyses.

Nonresponse Bias and US Census Comparisons. The RMU graphically compared categorized percentages for respondents to these percentages for nonrespondents. Chi-square testing (Mendenhall 1975) demonstrated any statistically significant differences. As another evaluation of the sample's validity, some social and economic characteristics were matched against corresponding characteristics from the 1990 Census. Also, the sample's participation rates were compared to rates from other publications and to estimations from FWP license sales.

Relationships among Variables. The PEIS Team and the RMU used chi-square tests to determine whether the gender of respondents influenced participation in wildlife-related recreation and in beliefs. Responses to belief statements were placed in "Agree", "Disagree", or "Neutral" categories and tested against gender. Social, economic, and demographic factors were tested to evaluate their influence on participation in hunting and viewing.

RESULTS AND DISCUSSION

Beliefs

Hunting. The 519 residents responded to 17 belief statements about hunting. The responses range from strong consensus on some topics to polarization on others. (For brevity, "strongly agree" and "agree" responses are discussed as agreement and "strongly disagree" and "disagree" are discussed as disagreement. Appendix A shows tabularized versions of most of the results.)

The respondents reached consensus on support for the basic concepts of hunting (Figs 2-7). They strongly supported maintaining the "right to hunt"; well over 90 percent opposed any efforts to eliminate hunting. Hunting was viewed as socially and culturally important. It was also perceived as a valuable source of information and an acceptable goal for management. Support for hunting is also high in Colorado -- 85 percent of residents find big game hunting "acceptable" (Table 5).

Figure 2. The opportunity to hunt should not be taken away from Montanans.

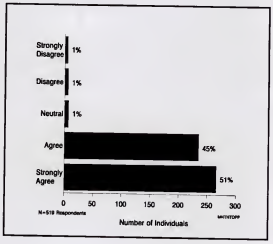


Figure 3. Do you approve or disapprove of efforts to abolish hunting in Montana?

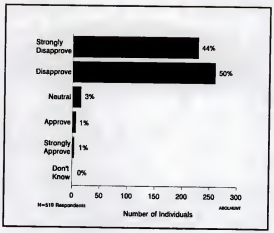


Figure 4. Hunting is an important cultural tradition in Montana.

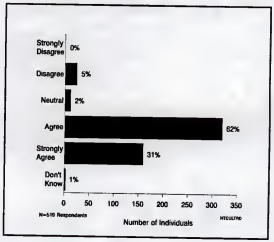


Figure 5. Hunting is a socially acceptable recreational pursuit for families in Montana.

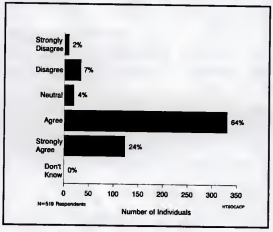


Figure 6. Without information from hunter harvests, it would be extremely difficult to manage wildlife.

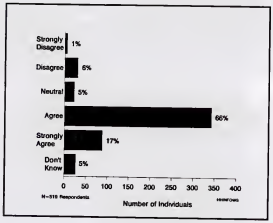
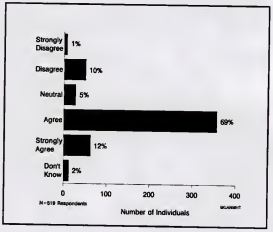


Figure 7. Managing animal numbers to improve hunting is acceptable.



As the belief statements became more specific, the consensus weakened (Figs. 8-14). Using hunting to reduce crop damage was accepted; however, hunting in state parks and game farms was not. Slightly under half of the respondents saw a problem with hunters wounding animals. In Colorado, 42 percent of residents thought that hunters were not sensitive to animals (Table 5). Responses to statements about hunting's relationship to natural mortality, including predation, showed that many agreed with the basic concept of compensatory mortality. The concept is based on one form of mortality replacing another and total mortality remaining constant (Bailey 1984).

Figure 8. Hunting keeps agricultural crops and/or forage from being severely damaged by wildlife.

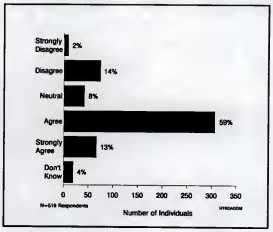


Figure 9. Hunting in state parks is unacceptable in Montana.

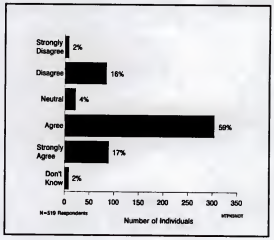


Figure 10. A majority, over 50 percent, of hunters in Montana wound animals and do not retrieve them.

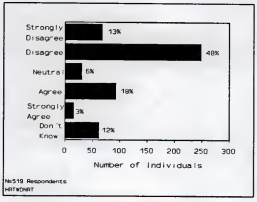


Figure 11. Game animals killed by hunting replaces natural mortality.

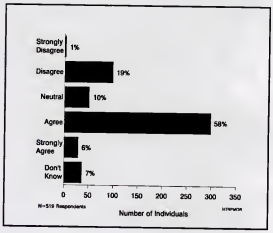


Figure 12. Hunting is not acceptable if those animals would otherwise be killed by predators.

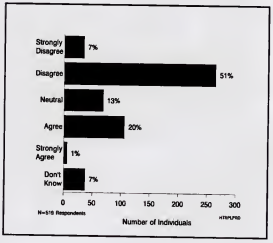


Figure 13. The hunting of privately owned, confined wildlife (like game farm animals) is unacceptable in Montana.

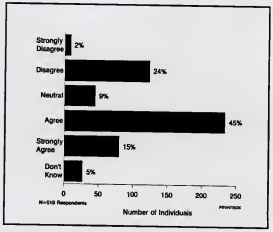
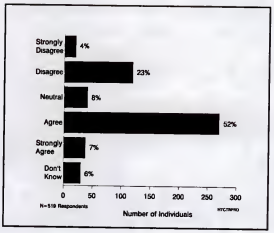


Figure 14. Some predator populations, such as mountain lions, should be controlled through hunting because their prey species are limited.



Responses to three statements suggested polarized beliefs (Figs. 15-17). The respondents were split on the acceptability of hunting nongame species, the effect of hunting on animal population structure, and the relationship between hunting and highway safety.

Figure 15. Nongame species, such as the prairie dog, should not be hunted unless they threaten people's livelihood, safety, or health.

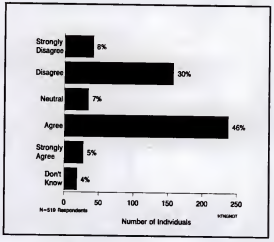


Figure 16. Hunting prevents animal populations from maintaining a more natural age and sex composition.

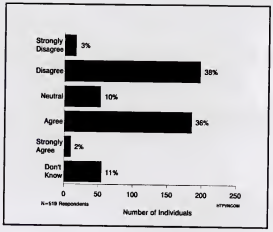
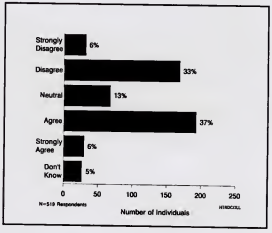


Figure 17. Hunting improves highway safety by reducing the potential for animal-vehicle collisions.



Hunting Regulations. Four questions and one belief statement gathered reactions to hunting regulations (Figs. 18-21). Most respondents (57%) found current regulations understandable; however, 26 percent thought the regulations were too complex. Biological factors were rated as the most important considerations for developing regulations. Yet, many of the respondents acknowledged the importance of socio-political and economic considerations.

Figure 18. The complexity of Montana's hunting regulations discourages participation in this activity.

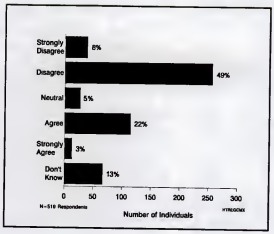


Figure 19. How important are socio-political considerations for MFWP in setting hunting regulations?

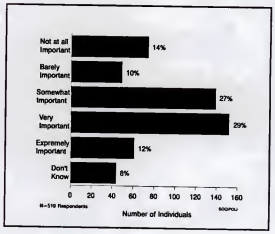


Figure 20. How important are biological considerations for MFWP in setting hunting regulations?

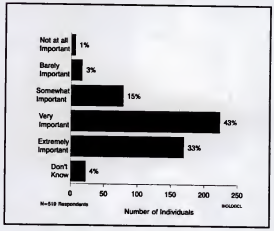
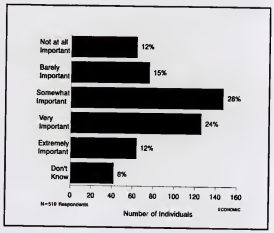


Figure 21. How important are economic influences on setting hunting regulations?



Wildlife Viewing. The respondents considered 17 belief statements on wildlife viewing and reached consensus on six of them (Figs. 22-27). Nearly all (98%) thought that children could learn about nature by watching wildlife. A lower percentage (84%) believed all ages could learn about humans' role in nature through wildlife observation. Wildlife viewing was rated by 84 percent as worthwhile family recreation. Many respondents included wildlife interests as an important component of their life in Montana and realized that wildlife were indicators of environmental conditions. There was little support for feeding wildlife to view them.

Figure 22. Enabling children to view wildlife is a good way to educate them about nature.

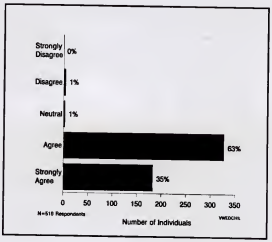


Figure 23. Wildlife viewing is a worthwhile recreational pursuit for Montana families.

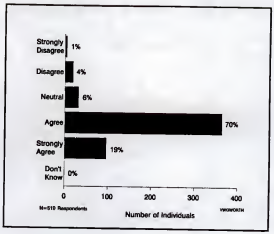


Figure 24. The abundance and diversity of wildlife species you observe reflects the health of the natural environment.

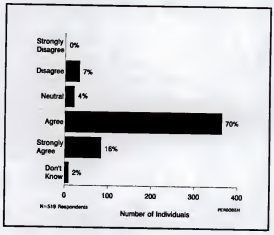


Figure 25. Educating people about their role in the natural environment is possible through wildlife viewing.

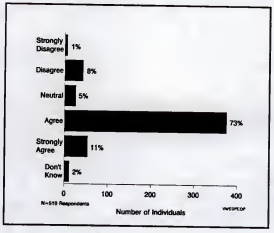


Figure 26. Feeding wildlife in order to view them may be harmful to those animals.

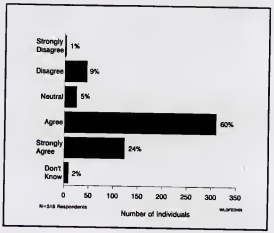
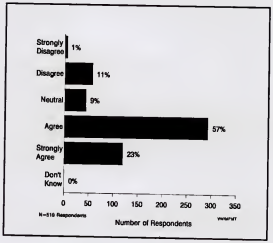


Figure 27. Viewing and being interested in wildlife are primary reasons why I enjoy being in Montana.



Reactions to five statements demonstrated general agreement on viewing topics; however, disagreement began to surface regarding some topics (Figs. 28-32). Over half (56%) of the respondents indicated that continuing to observe wildlife was necessary to maintain their enjoyment of life. About two-thirds believed that MFWP should emphasize the relationship between habitat and viewing to both private and public land managers. Similar proportions perceived negative impacts of viewers on wildlife and habitat.

Figure 28. Personal observations over the years of lower numbers or fewer wildlife species would decrease your enjoyment of life in Montana.

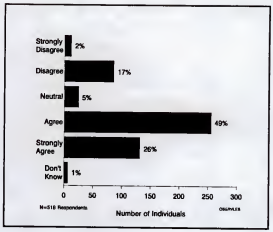


Figure 29. MFWP should emphasize the importance of wildlife habitat to other agencies to increase viewing opportunities on public land.

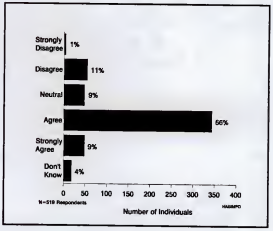


Figure 30. Many wildlife viewers unintentionally damage much of the vegetation (or habitat) that supports wildlife.

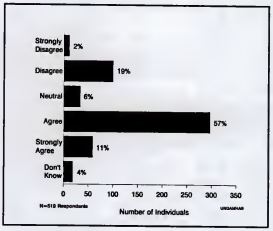


Figure 31. MFWP needs to emphasize habitat improvement with private landowners to increase opportunities for viewing wildlife.

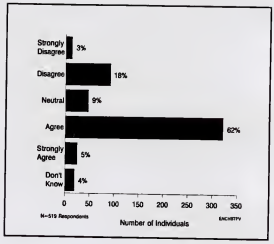
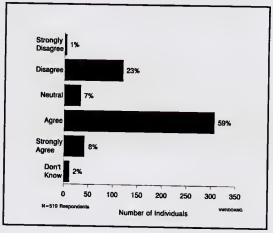


Figure 32. Survival of animals may be affected by disturbance from wildlife viewers.



Responses to the final six statements showed increasingly diverse beliefs about viewing (Figs. 33-38). In some instances, the responses suggest polarized beliefs. Although about one-half of the respondents wanted to view wildlife under isolated conditions, another one-quarter indicated that these conditions were not required for their enjoyment. Responses to two statements about landowners profiting from viewing showed both support and opposition. Many respondents believed that habituated animals became dangerous to viewers but others rejected this notion. Respondents were divided on the acceptability of viewing sites and the influence of viewing on support for hunting.

Figure 33. When viewing wildlife, it is important to me to have few other people present

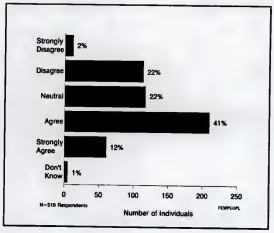


Figure 34. Private landowners should be reimbursed if they manage their property to increase public opportunities to view wildlife.

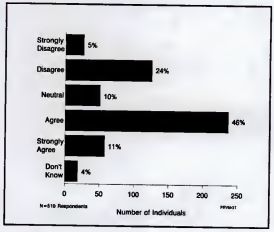


Figure 35. People who manage wildlife habitat on their property should be able to charge for wildlife viewing.

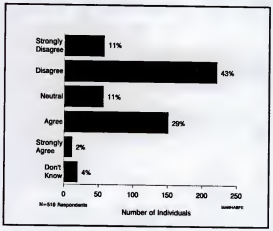


Figure 36. Animals become accustomed to wildlife viewers which makes those animals more dangerous to people.

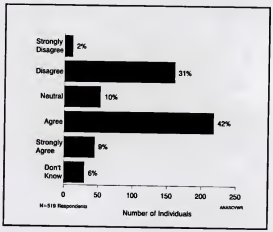


Figure 37. Providing designated wildlife viewing sites or guided tours does not adversely affect wildlife or their habitats.

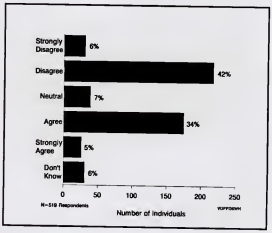
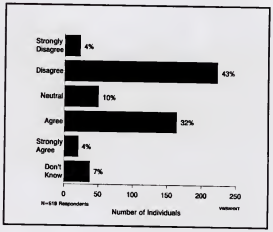


Figure 38. Participation in wildlife viewing tends to make people less supportive of hunting.



Trapping. Responses to 15 statements showed less agreement about trapping beliefs than did the responses for hunting and wildlife viewing. This result may be due a lower familiarity with trapping; over the preceding year, only three percent of respondents trapped in Montana (page 35). Although 65 percent disapproved of efforts to abolish trapping (Fig. 42), 54 percent favored outlawing leg-hold traps (Fig. 47) -- the predominant trapping method. Also, 43 percent replied "don't know" when asked about the complexity of trapping regulations (Fig. 49).

There was abundant support for requiring a trapper education course but scant support for trapping near heavily-used trails and roads (Figs. 39-40).

Figure 39. All licensed trappers in Montana should complete a trapper education program.

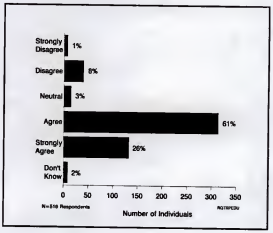
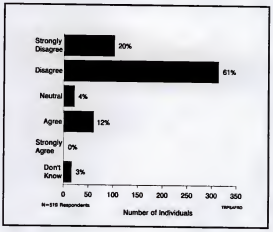


Figure 40. Trapping near heavily used public trails or roads is safe.



Most respondents (70%) thought trapping had a place in controlling wildlife that threatened humans (Fig. 41). Although 65 percent opposed efforts to abolish trapping (Fig. 42), this opposition was substantially lower than opposition to abolition of hunting (Fig. 3). Respondents seemed divided on the social and cultural roles of trapping (Figs. 43-45).

Figure 41. Trapping should not be used to control nuisance wildlife and/or to protect public health and safety.

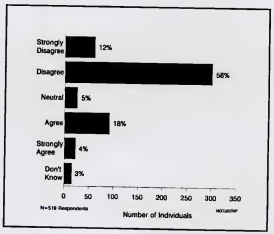


Figure 42. Do you approve or disapprove of efforts to abolish trapping in Montana?

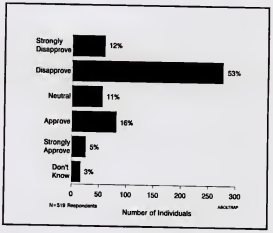


Figure 43. Trapping is an important cultural tradition in Montana.

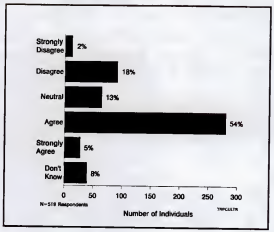


Figure 44. Trapping is a socially unacceptable activity.

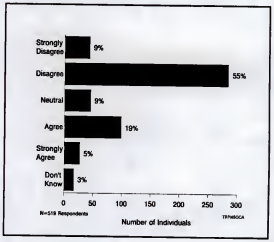
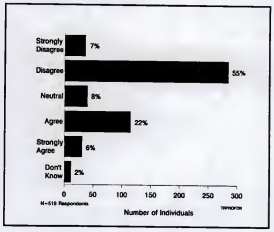


Figure 45. Trapping for profit is morally unacceptable.



A pattern of disparate beliefs emerged for the final statements on trapping (Figs. 46-53). As previously noted, many respondents were against leg-hold trapping, the most common form of trapping. The respondents were split on trapping's effect on commercializing furbearers, especially through intensive management and fur farms. An even greater division was evident for beliefs about the humaneness of trapping, taking unintentially trapped animals, and the role of trapping in environmental awareness.

Figure 46. Because furbearer populations in Montana have economic value, they should be more intensively managed.

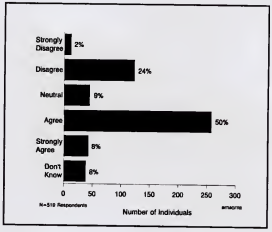


Figure 47. Leg-hold traps should be outlawed.

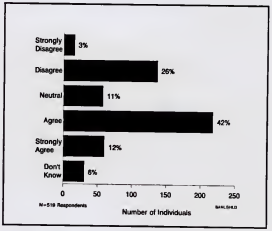


Figure 48. Private ownership of furbearing animals for commercial profit (such as fur farms) is acceptable in Montana.

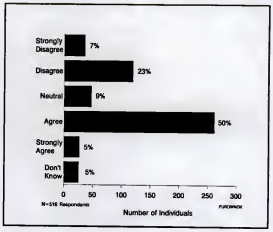


Figure 49. The complexity of Montana's trapping regulations discourages participation.

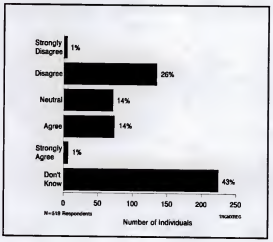


Figure 50. Using fur for clothing is a wise use of a renewable resource.

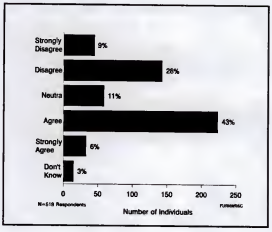


Figure 51. Too many nontargeted animals are caught or killed in traps.

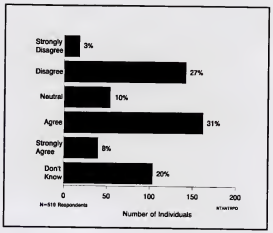


Figure 52. Trapping is cruel and inhumane.

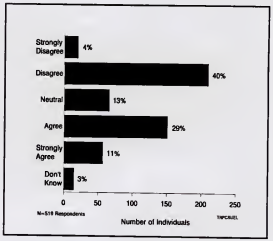
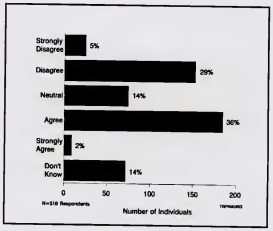


Figure 53. Trapping promotes an understanding of species relationships in the natural environment.



Participation

Hunting. Forty-five percent of respondents hunted within the preceding year. This proportion is the highest participation rate reported for Montana. Previous studies have listed the state's hunting segment at 26 percent (USFWS and US Census Bureau 1993) and 31 percent (MFWP 1991) of the adult population. In 1993, 24 percent of eligible residents bought hunting licenses. These three proportions are near the figure of 26 percent reported for Colorado (Standage Accureach 1991). Hunters make up only 7 percent of the US population (pages 4 and 7, Table 6).

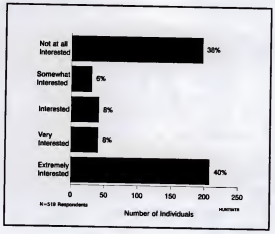
Since all studies used different methods and sampling periods, the figures they supply cannot be directly compared. However, the other studies do suggest that the Dolsen (1994) sample may contain too many hunters to accurately represent Montana's population. Hunters are probably more responsive than nonhunters to surveys about wildlife. Since more men than women hunt (page 41), this large proportion of hunters may be responsible for the predominance of men in the sample (61%).

The true percentage of Montanans that hunt probably lies near the low end of the 24 to 45 percent range. Regardless of the percentages' accuracy, all studies show that hunting is more popular in the Rocky Mountain states than in the nation as a whole. Montana's hunters wanted to continue hunting and many nonhunters were interested in trying this recreation (Fig. 54). The relatively high participation and interest in hunting may be related to the high incidence of parents who hunted (page 35).

Q: Did you hunt at all in Montana during the last twelve months?
A: Within the past year, 45 percent of respondents hunted in Montana.

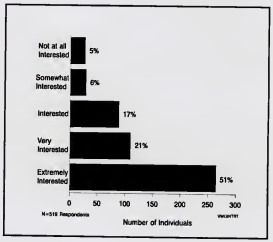
Q: If you did not hunt in Montana during the last year, did you do so elsewhere?
A: Of those respondents who hunted during the past year, 8 percent hunted outside of Montana.

Figure 54. On a scale of 1 to 5 (where 1 is not at all interested and 5 is extremely interested) how interested are you in hunting in Montana in the future?



Wildlife Viewing. Nearly three-quarters of respondents took trips to view wildlife in the past year and almost all incidentally watched wildlife. Interest in primary viewing is high (Fig. 55). The percentage of active viewers is similar to the 77 percent viewing rate for Colorado (Standage Accureach 1991). This 71 percent viewing rate in Montana, however, is greater than other percentages reported for the state -- 26 percent (MFWP 1991) and 52 percent (US Fish and Wildlife Service and US Census Bureau 1993). As with hunters (page 33), wildlife viewers may be more likely than nonviewers to join in wildlife surveys. Thus, viewers might be over-represented in the Dolsen (1994) sample. Most (53%) of the sample had a parent who watched wildlife (page 35). Forty percent of Americans watch wildlife; however, only 16 percent took trips with the intent of viewing wildlife (pages 4 and 7, Table 6).

Figure 55. On a scale from 1 to 5 (where 1 is not at all interested and 5 is extremely interested), how interested are you in taking future trips in Montana where your major trip purpose would be to view wildlife?



Q: During the last twelve months, did you make a trip more than one mile from your home where YOUR MAJOR TRIP PURPOSE was viewing wildlife in Montana? Do not include trips to zoos, circuses, museums or aquariums.

A: Within the last year, 71 percent of respondents went on a trip of over a mile away from home for the primary purpose of watching wildlife.

Q: During the past twelve months, did you make a trip in Montana more than one mile from your home where viewing wildlife was NOT A MAJOR PURPOSE but on which you ALSO enjoyed seeing wildlife? Do not include trips to zoos, circuses, museums, or aquariums.

A: Virtually everyone (98%) sampled took a trip of over a mile away from their home where the secondary purpose of that trip was to watch wildlife.

Trapping Only 3 percent of the sample trapped in Montana during the last year; however, 25 percent either trapped before 1992 or trapped in another state. This proportion of former trappers suggest that trapping was once a more common activity. This possibility is

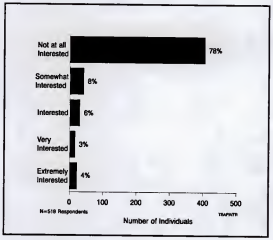
supported by 30 percent of the respondents having a parent who trapped (below). A changing society or falling pelt prices may be responsible for the decline of the trapping rate. The 1 percent trapping participation rate in Colorado (Standage Accureach 1991) is even lower than Montana's rate. Given the low participation rate, interest in trapping in Montana is surprisingly high (Fig. 55).

Q: Did you trap in Montana during the last twelve months?
A: Within the past year, 3 percent of those residents surveyed trapped in Montana.

Q: Not all trapping in Montana requires a permit, did you have a permit to trap?
A: Of the respondents who trapped, 35 percent had a permit from MFWP.

Q: If you did not trap in Montana during the last year, did you trap in another state or prior to last year?
A: A total of 25 percent of the respondents trapped either in another state or prior to last year.

Figure 56. On a scale from 1 to 5 (where 1 is not at all interested and 5 is extremely interested) how interested are you in trapping in Montana in the future?



Q: What wildlife-related activities did your parents participate in?
A: While growing up, 70 percent of the respondents had at least one hunting adult in the home, 53 percent had at least one adult in the home who watched wildlife, and 30 percent had at least one trapping adult in the home.

Sample Characteristics

The sample was distinguished from MFWP's 1991 sample (Table 4) in the following ways: 1) an unequal gender ratio of 61% men to 39% women (weighted to 50% to 50% for all

but chi-square analyses), 2) more respondents in the youngest age group, 3) more newcomers, 4) fewer western residents, 5) more unmarried persons, 6) more people with "some college", and 7) fewer people in the high income brackets (Figs. 57-62). Nearly half of the respondents grew up in small towns (Fig. 63) and most belonged to an organization involved with wildlife or wildlife habitat (Fig. 64).

Q: Are you male or female?
A: Male -- 61 percent, female -- 39 percent

Figure 57. What is your age?

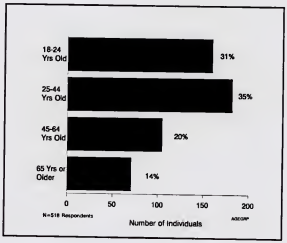
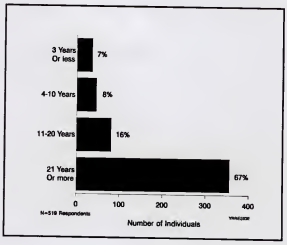


Figure 58. How many years have you resided in Montana?



Q: What is the zip code of your home residence?
A: Of 473 respondents, 52 percent lived in the "west" and 48 percent lived in the "east" (see Fig. 59).

Figure 59. Distribution of respondents.

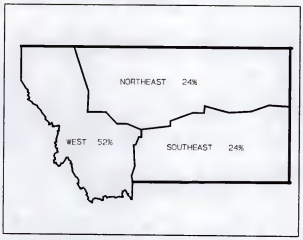


Figure 60. What is your marital status?

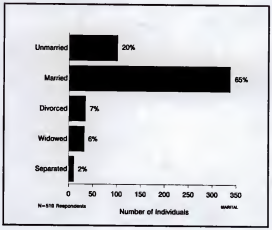


Figure 61. What is the highest level of education you have completed?

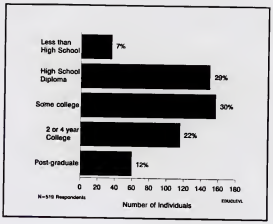


Figure 62. What was your approximate annual household income in 1992, before taxes (Sample size = 425)?

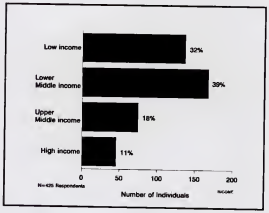


Figure 63. Where did you live most of the time you were growing up (Sample size = 444)?

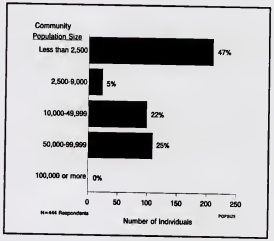
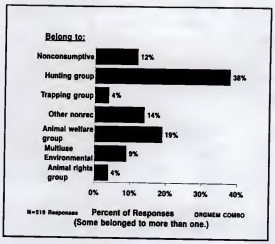


Figure 64. If you belong to an organization interested in wildlife issues, what type of group is it? Data recording did not account for multiple memberships. 111 respondents did not belong to any group. Sample size was 241.



Relationships Among Variables

Gender and Beliefs. Although women's beliefs indicated support for hunting, chi-square testing demonstrated significantly more support from men ($p<0.05$). Gender significantly influenced responses to 11 of the 20 hunting belief statements. In the cases with gender differences, both men and women either agreed or disagreed with the same belief statements; however, they differed in the strength of agreement or disagreement. Gender-related differences were more common for hunting than for viewing beliefs.

Men were more likely than women to agree with belief statements about the social acceptance of hunting and the subsequent social and economic benefits. Such statements included the ideas of managing animal numbers to improve hunting (Fig. 7), harvested animals replacing natural mortality (Fig. 11), controlling predators through hunting to protect prey species (Fig. 14), and using hunting to protect crops from wildlife damage (Fig. 8). Women were more prone to agree than men with statements that identified circumstances where hunting might not be acceptable. These statements included a situation where game might otherwise be taken by predators (Fig. 12) or the acceptability of hunting in state parks (Fig. 9).

Three questions asked about the importance of socio-political, biological, and economic considerations in setting hunting regulations (Figs. 19-21). Only the socio-political and economic questions showed significant differences between the beliefs of men and women. In both cases, women were more apt to respond with "very" or "extremely" important than were men. Men tended to attach little or no importance to these considerations.

Men and women held similar beliefs about wildlife viewing. They generally agreed or disagreed with the same statements in roughly equal proportions. Gender significantly influenced responses to only two of the 17 viewing statements ($p<0.005$).

Significant chi-square values originated from statements expressing perceptions of viewing's adverse impacts to wildlife or their habitat. Women's responses expressed the belief that the impacts were important. In contrast, men tended to dismiss or minimize the impacts. Men and women responded differently to "Providing designated wildlife viewing sites or guided tours does not adversely affect wildlife or their habitats" (Fig. 37). Most women disagreed while most men concurred with that statement.

Women were more apt than men to agree with "Many wildlife viewers unintentionally damage much of the vegetation (or habitat) that supports wildlife" (Fig. 30). While 75 percent of the women agreed with the statement, only 60 percent of the men agreed.

Gender significantly influenced responses to 13 of 15 belief statements about trapping ($p < 0.05$). Men usually agreed with statements describing economic or social benefits while women concurred less with these statements. Women agreed more often with statements portraying a downside to trapping.

Men and women apparently hold different beliefs about specific trapping issues. Most men agreed that: use of fur clothing is a wise use of natural resources (Fig. 50), trapping promotes an understanding of species relationships (Fig. 53), and commercial use of furbearers is acceptable (Fig. 48). Conversely, most women disagreed with these statements and they strongly agreed with statements with which men heavily disagreed. These statements included the ideas: too many nontargeted animals are trapped (Fig. 51), leg-hold traps should be outlawed (Fig. 47), and trapping is inhumane (Fig. 52).

Responses to statements about the general acceptability of trapping (Fig. 44) indicated that both men and women support trapping. Women, however, exhibited a lower, conditional level of support.

Participation and Beliefs. Participants can be classified into four types: nonviewing hunters, nonhunting viewers, hunter/viewers, and nonparticipants. Their relationship to beliefs about setting hunting regulations was tested with chi-square. Responses to the role of economic interests in setting regulations (Fig. 21) was not related to participant type.

Responses to the question about socio-political considerations (Fig. 19) depended on participant type ($p < 0.005$). Nonviewing hunters were more likely than other participant types to attach no importance to these considerations. On the other hand, nonhunting viewers were more likely to believe that socio-political considerations were important.

The question about biological considerations (Fig. 20) also showed a significant relationship to participant type ($p = 0.000$). Nonhunting viewers were most likely to regard these considerations as important while nonparticipants were least likely to have this belief. None of the participant types agreed that biological factors were unimportant.

Participation and Gender. Significantly more men (64 percent) than women (17 percent) had hunted in the previous year. Men also showed more interest in future hunting than did women ($p < 0.001$ for both statements).

Gender did not influence responses to questions about participation in viewing (Fig. 54, page 40). Similar proportions of men and women participated in both primary and secondary viewing within the previous year. Nearly equal proportions of men and women were interested in taking a primary viewing trip in the future.

Nonhunting viewers and nonparticipants were more likely to be women than men. Large majorities of both nonviewing hunters and hunter/viewers were men and most nonhunting viewers were women.

Due to insufficient sample size, the relationship between trapping and gender was not examined.

Participation and Social and Demographic Factors. Some social and demographic characteristics of Montana residents influence their participation in hunting and wildlife viewing (Table 7).

Table 7. Significant relationships between social and demographic factors and respondents' participation in hunting and wildlife viewing, 1993. (Determined by chi-square testing, where $p < 0.05$).

Factor	Item[1]	Significant relationship	
		Hunter	Wildlife viewer
Parents viewed wildlife	page 35	No	Yes
Parents hunted	page 35	Yes	Yes
Parents trapped	page 35	No	No
Time residing in state	Fig. 56	No	Yes
Education	Fig. 59	Yes	No
Income	Fig. 60	Yes	Yes
Age	Fig. 55	Yes	Yes
Marital status	Fig. 58	Yes	Yes

[1] Location of statement or question in report.

Parents that hunted apparently swayed their offspring to either hunt or view. Nonviewing hunters and hunter/viewers were the most heavily influenced by their parents. A family tradition of wildlife viewing was continued by children; however, viewing did not encourage the next generation to hunt. Most nonhunting viewers and hunter/viewers had viewing parents; conversely, nonviewing hunters and nonparticipants had nonviewing parents. Trapping did not affect participation in hunting or viewing.

New Montana residents were more likely than long-time residents (Fig. 58) to take primary viewing trips. Both hunters and viewers typically came from the middle-income classes (Fig. 62). College-educated people usually were not hunters.

Adults under 44 years old were just as prone to hunt as not to hunt. Between 45 and 64 years, the number of hunters begins to taper down and after people reach 65, they are twice as likely not to hunt. In the under 40 age category, wildlife viewers outnumbered non-viewers by three to one. This ratio fell to two to one through 64 years of age and by 65 and older, nonviewers were more common than viewers.

A single or a married situation did not seem to affect the probability of a person hunting. Divorcees were less apt to hunt than coupled persons while widowed people, possibly due to gender or age, usually did not hunt. For all statuses except widowed, there were twice as many viewers as nonviewers. Nonviewers slightly outnumbered viewers in the widowed category, again, possibly due to gender or age.

Sample Quality

Nonresponse Bias. Respondents and nonrespondents reacted differently to eight items (Figs. 65-72) selected for the nonresponse tests. Chi-square analyses (Table 8) showed that five of the eight differences were significant.

The results of nonresponse bias testing raise questions about the quality of the sample. Is the bias great enough to substantially compromise the utility of the sample? Is the sample representative of Montana's general population? Unfortunately, nonresponse bias testing often serves to raise, rather than answer, such questions. The near split between the significant tests (five) and the insignificant tests (three) obscures any conclusions. In contrast, Boxall and McFarlane (1994) found only one significant difference in their testing and were able to conclude that their sample was basically free of nonresponse bias. Also, the eight items tested represent only 13 percent of the full questionnaire. This percentage is low when compared to the 33 percent used by Duffield et al. (1994). More bias tests could have led to a different evaluation of sample quality.

Salant and Dillman (1994) and Duffield et al. (1994) emphasize that nonresponse bias testing is most useful when it is related to study objectives. One of the main objectives of Dolsen (1994) was to describe beliefs of Montana's overall adult population. The five significant tests show that nonrespondents differed from respondents in key areas: support for maintaining the "right to hunt or trap", education, and participation in hunting and viewing.

High chi-square values (Table 8) indicate that respondents and nonrespondents differ most in levels of participation. These differences and the high participation rates (pages 33 and 34) suggest that the sample contained more hunters and viewers than the state's population. These participants hold different beliefs than the nonparticipants (pages 39-42). Since hunters are

usually men (page 41), the large proportion of hunters could have contributed to the sample's initial unbalanced gender ratio (61% men to 39% women).

Differences between the sample and the state's population are reinforced by comparing US Census data to selected sample characteristics (pages 46-47, Figures 73-76, Table 9). Combined with the nonresponse bias testing, these differences show that the sample should not be used to draw definitive conclusions about Montana's population. Further questions about the sample's quality were raised by the response rate of 53 percent. This rate was below the recommended 60-70 percent minimum response rate (Salant and Dillman 1994).

The sample is more useful in describing the beliefs for participants than for nonparticipants. Since participants are MFWP's key constituents, the descriptions provide a valuable picture of the Department's existing recreational environment. Also, the descriptions could be used in developing a new Wildlife Program focused on these key constituents.

Table 8. Summary statistics for nonresponse bias and full sample chi-square comparisons (95% level).

Questions/Variable Topic	Chi-square	df[1]	p<[2]	Full n[3]	NRBT n[4]
*Wildlife viewing & interest are why I enjoy MT (Fig. 27)	1.37	2	0.5	519	283
Approve/disapprove efforts to abolish MT hunting (Fig. 3)	11.23	2	0.01	519	283
Approve/disapprove efforts to abolish MT trapping (Fig. 42)	19.61	2	0.001	519	283
*Your home residence/region (W,NE,SE) (Fig. 57)	4.11	2	0.128	473	269
Your highest level of education achieved (Fig. 59)	19.66	4	0.01	519	283
Participate in MT primary nonresidential wildlife viewing (Page 34)	63.94	1	0.001	519	283
Participate in hunting in MT during last 12 months (Page 33)	34.57	1	0.001	519	283
*Participate in trapping in MT during last 12 months (Page 35)	1.73	1	0.189	519	283

[1]Degrees of freedom
[2]Probability is less than
[3]Full sample size
[4]Nonresponse bias test sample size
* Not significant

Figure 65. Do you approve or disapprove of efforts to abolish hunting in Montana?

(Significantly different, Table 8)

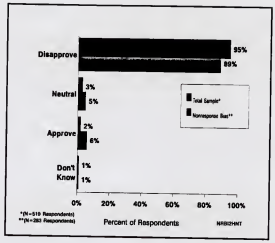


Figure 66. Viewing and being interested in wildlife are primary reasons why I enjoy being in Montana.

(Not significantly different, Table 8)

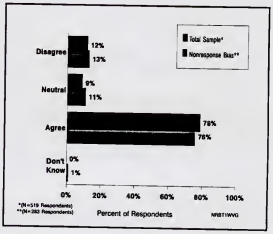


Figure 67. Do you approve or disapprove of efforts to abolish trapping in Montana?

(Significantly different, Table 8)

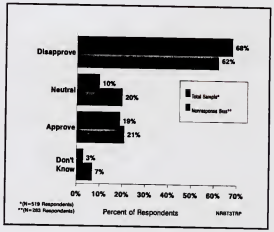


Figure 68. Did you hunt at all in Montana during the last twelve months?

(Significantly different, Table 8)

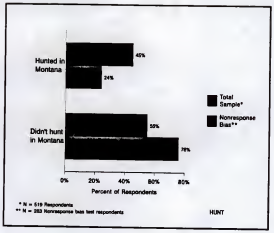


Figure 69. During the last twelve months, did you make a trip more than one mile from your home where YOUR MAJOR TRIP PURPOSE was viewing wildlife in Montana? Do not include trips to zoos, circuses, museums or aquariums.

(Significantly different, Table 8)

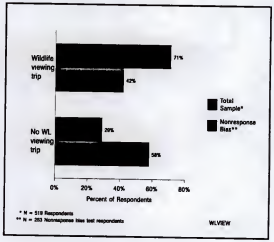


Figure 70. Did you trap in Montana during the last twelve months?

(Not significantly different, Table 8)

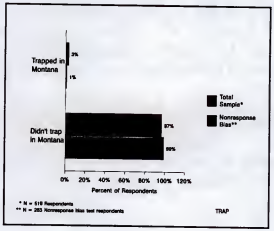


Figure 71. What is the zip code of your home residence?

(Not significantly different, Table 8)

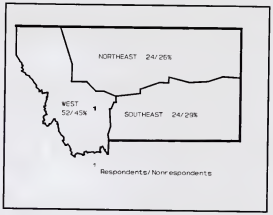
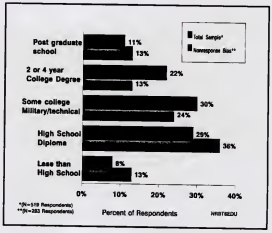


Figure 72. What is the highest level of education you have completed?

(Significantly different, Table 8)



Sample/US Census Comparisons. The US Census Bureau supplies the most accurate figures for demographic and socio-economic characteristics of Montana's population. Its sample size was 306,919 Montanans. Some of these figures were contrasted with selected sample characteristics; however, these are not direct comparisons because of the disparity in sampling years. Dolsen (1994) sampled in 1993 and the Census Bureau sampled in 1990 and 1985. This disparity precludes statistical analyses of the comparisons.

The most obvious difference between the unweighed sample and Census data is the gender ratio. The sample ratio of about 3 men to 2 woman compares to the Census ratio of 1 man to 1 woman. Other comparisons are smaller but demonstrate differences between the sample and the state's population (Figs. 73-76, Table 9). These comparisons add to the concern about the sample's quality (page 42).

Q: Are you male or female?	Dolsen (1994)	1990 Census (Over 18 years)
A: Male	61 percent	48.8 percent
Female	39 percent	51.2 percent

Figure 73. What is your age?

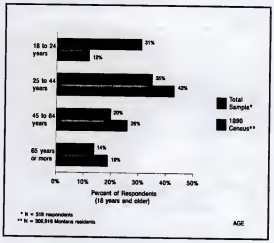
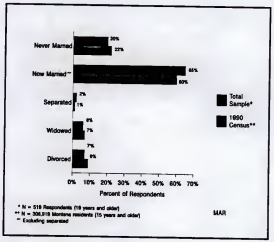


Figure 74. What is your marital status?



Census data shows that about 88 percent of adults (persons over 15 years old) have resided in Montana for five or more years (Table 9). This percentage compares to the 83 percent 5-year residence for the sample (Fig. 56).

Table 9. Residence in 1985: State and County Level (Persons 5 years & older).

	Number	%
TOTAL	740,218	100.0
Same house in 1985	385,101	52.0
Different house in U.S. in 1985	349,440	47.2
Same county	184,592	24.9
Different county	164,848	22.3
Same state	80,325	10.9
Different state	84,523	11.4
Northeast	4,325	0.6
Midwest	19,571	2.6
South	12,376	1.7
West	48,251	6.5
Abroad in 1985	5,677	0.8
Puerto Rico	13	0.0
U.S. outlying area	214	0.0
Foreign country	5,450	0.7

Source: 1990 Census of Population and Housing, Summary Tape File 3A, Sample Data, Profile 4, Page 43.

Figure 75. What is the highest level of education you have completed?

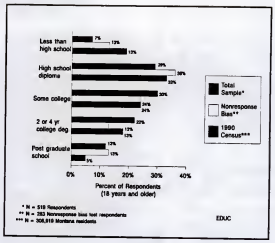
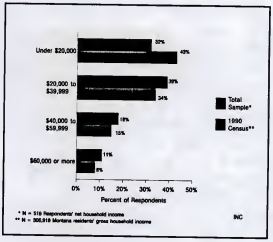


Figure 76. What was your approximate annual household income in 1992, before taxes?



CONCLUSIONS AND SUMMARY

1. **The sample should not be used to draw definitive conclusions about the beliefs of Montana's general population.** Nonresponse bias testing raised questions about sample quality. Also, sample characteristics, especially the initial gender ratio, differed from corresponding characteristics supplied by the US Census Bureau. (*Figs. 65-76, Tables 8-9, and Appendix A-Table 7*)

2. **The sample probably had a greater proportion of hunters and wildlife viewers than Montana's overall population. Nonparticipants' lack of interest in wildlife made them difficult to capture in the sample.** Since hunters tend to be men, this relationship could have contributed to the predominance of men in the sample (61% men to 39% women). (For all analyses except chi-square, the sample was weighted to 50% men to 50% women.) In general, participants had different beliefs than nonparticipants. (*Pages 33-35, 39-41, and Appendix A-Tables 5 and 7*)

3. **Although the sample may not represent the state's population, it provides interesting and previously-unavailable information about participation and beliefs.** This information can be used to describe the recreational environment in the Wildlife Programmatic EIS (in prep). Furthermore, the beliefs of a sample dominated by hunters and viewers could be used by MFWP to develop programs and activities aimed at key constituencies. (*Page 46*)

4. **The 519 sample members responded to 17 belief statements about hunting. They strongly supported the "right to hunt"; well over 90 percent opposed any efforts to eliminate hunting.** Hunting was considered socially and culturally important. Most members supported hunting as a management tool and opposed hunting in state parks and game farms. Sample members seem to understand the basic concepts of compensatory mortality. They were divided on the acceptability of hunting nongame, the effect of hunting on animal population structure, and the relationship between hunting and highway safety. Most respondents (57 percent) found hunting regulations understandable; however, a substantial percentage (26 percent) did not. Respondents seemed to feel that biological, socio-political, and economic considerations should all be used in formulating regulations. (*Figs. 2-21 and Appendix A-Table 1 and 2*).

5. **The 519 respondents reacted to 17 belief statements concerning wildlife viewing. Most (80 to 98 percent) agreed that: they could learn about nature through watching wildlife, wildlife viewing was a worthwhile family activity, wildlife populations indicate environmental health, and observing wildlife adds to the quality of life.** Few (10 percent) concurred with feeding animals to improve viewing. One-half wanted isolated conditions for viewing but one-quarter did not. The sample was split on the acceptability of making profits from wildlife viewing, the dangers of habituated animals, the use of viewing sites, and the influence of viewing on support for hunting. (*Figs. 22-38 and Appendix A-Table 3*)

6. **The sample of 519 Montanans showed less agreement on trapping belief statements than on the hunting and viewing statements. This result is likely caused by a low familiarity with trapping; only 3 percent of the sample trapped.** Although about two-thirds disapproved of abolishing trapping, over half favored outlawing the predominant trapping tool (leg-hold traps). Also, 43 percent replied "don't know" when asked about trapping regulations. Respondents supported a mandatory trapper education course and opposed trapping near heavily-used roads and trails. They were divided on the humaneness of trapping, the significance of animals being trapped unintentionally, and the value of trapping in environmental awareness. (*Figs. 39-53 and Appendix A-Table 4*)

7. **Nearly half (45%) of the sample hunted, 71 percent took wildlife viewing trips, and 3 percent trapped.** The proportion of hunters is the highest reported for Montana. The viewing rate is also higher than other studies but this difference may be caused by different definitions of viewing. Responses indicate that trapping was once a more common activity. Interest in hunting and viewing was high. Compared to the low participation rate, there was even considerable interest in trapping. (*Pages 33-35 and Figs. 54-56 and Appendix A-Tables 5 and 6*)

8. **Chi-square testing showed relationships among several sample variables.** Men supported hunting and trapping more than women did but both genders held similar beliefs about wildlife viewing. Gender influenced participation in hunting but not viewing -- 64 percent of men hunted while only 17 percent of women hunted. The respondents were swayed by their parents activities. Parents who hunted tended to have offspring who hunted or viewed; however, viewing parents encouraged only viewing by their offspring. New residents tended more toward primary wildlife viewing than did long-time residents. Most hunters and viewers came from middle income classes. Highly-educated people usually did not hunt. Hunting and viewing participation rates began slight declines at age 40 and steep decreases at age 65. The effect of marital status on participation was most pronounced for the widowed class; however, the lower proportion of participants in this class may be primarily related to gender or age. (*Pages 39-42 and Table 7*)

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APPENDIX A

Summary of Selected Results

Table 1. Responses of 519 Montana residents to belief statements on hunting, 1993.

Belief statement	% [1]		
	Agree	Disagree	Neutral/ Don't know
1. The opportunity to hunt should not be taken away from Montanans.	96	2	1
2. Do you agree or disagree with efforts to abolish hunting in Montana?[2]	2	94	3
3. Hunting is an important cultural tradition in Montana.	93	5	3
4. Hunting is a socially acceptable recreational pursuit for families in Montana.	88	9	4
5. Without information from hunter harvests, it would be extremely difficult to manage wildlife.	83	7	10
6. Managing animal numbers to improve hunting is acceptable.	81	11	7
7. Hunting keeps agricultural crops and/or forage from being damaged by wildlife.	72	16	12
8. Hunting in state parks is unacceptable in Montana.	76	18	6
9. A majority, over 50 percent, of hunters in Montana wound animals and do not retrieve them.	21	61	18
10. Game animals killed by hunting replace natural mortality.	64	20	17
11. Hunting is not acceptable if those animals would otherwise be killed by predators.	21	58	20
12. The hunting of privately owned, confined animals (like game farm animals) is unacceptable in Montana.	60	26	14
13. The complexity of Montana's hunting regulations discourages participation in this activity.	25	57	18
14. Some predator populations, such as mountain lions, should be controlled through hunting because their prey species are limited.	59	27	14
15. Nongame species, such as the prairie dog, should not be hunted unless they threaten people's livelihood, safety, or health.	51	38	11
16. Hunting prevents animal populations from maintaining a more natural age and sex composition.	38	41	21
17. Hunting improves highway safety by reducing the potential for animal-vehicle collisions.	43	39	18

[1]Due to rounding, not all statement percentages total 100.

[2]Original question: Do you approve or disapprove of efforts to abolish hunting in Montana?

Table 2. Responses of 519 Montana residents to questions on hunting regulations, 1993.

Question	Importance (%)[1]					
	Extremely	Very	Somewhat	Barely	Not at all	Don't know
How important are biological considerations for FWP in setting hunting regulations?	33	43	15	3	1	4
How important are socio-political considerations for FWP in setting hunting regulations?	12	29	27	10	14	8
How important are economic influences on setting hunting regulations?	12	24	28	15	12	8

[1]Due to rounding, not all question percentages total 100.

Table 3. Responses of 519 Montana residents to belief statements on wildlife viewing, 1993.

Belief statement	% [1] Agree	Disagree	Neutral/ Don't know
1. Enabling children to view wildlife is a good way to educate them about wildlife.	98	1	1
2. Wildlife viewing is a worthwhile recreational pursuit for Montana families.	89	5	6
3. The abundance and diversity of wildlife species you observe reflects the health of the natural environment.	86	7	6
4. Educating people about their role in the natural environment is possible through wildlife viewing.	85	9	7
5. Feeding wildlife in order to view them may be harmful to those animals.	84	10	7
6. Viewing and being interested in wildlife are the primary reasons why I enjoy being in Montana.	80	12	9
7. Personal observations over the years of lower numbers or fewer wildlife species would decrease your enjoyment of life in Montana.	75	19	6
8. FWP should emphasize the importance of wildlife habitat to other agencies to increase viewing opportunities on public land.	75	12	13
9. Many wildlife viewers unintentionally damage much of the vegetation (or habitat) that supports wildlife.	68	21	10
10. FWP needs to emphasize habitat improvement with private landowners to increase opportunities for viewing wildlife.	67	21	13
11. Survival of animals may be affected by disturbance from wildlife viewers.	67	24	9
12. When viewing wildlife, it is important to me to have few other people present.	53	24	23
13. Private landowners should be reimbursed if they manage their land to increase public opportunities to view wildlife.	57	29	14
14. People who manage wildlife habitat on their property should be able to charge for wildlife viewing.	31	54	15
15. Animals become accustomed to wildlife viewers which makes those animals more dangerous to people.	51	33	16
16. Providing designated wildlife viewing sites or guided tours does not adversely affect wildlife or their habitats.	39	48	13
17. Participating in wildlife viewing tends to make people less supportive of hunting.	36	47	17

[1]Due to rounding, not all statement percentages total 100.

Table 4. Responses of 519 Montana residents to belief statements on trapping, 1993.

Belief statement	%[1] Agree	Disagree	Neutral/ Don't know
1. All licensed trappers in Montana should complete a trapper education program.	87	9	5
2. Trapping near heavily used public trails or roads is safe.	12	81	7
3. Trapping should not be used to control nuisance wildlife and/or to protect public health and safety.	22	70	8
4. Do you agree or disagree with efforts to abolish trapping in Montana?[2]	21	65	14
5. Trapping is an important cultural tradition in Montana.	59	20	21
6. Trapping is a socially unacceptable activity.	24	64	12
7. Trapping for profit is morally unacceptable.	62	28	10
8. Because furbearer populations in Montana have economic value, they should be more intensively managed.	58	26	17
9. Leg hold traps should be outlawed.	54	29	17
10. Private ownership of furbearing animals for commercial profit (such as fur farms) is acceptable in Montana.	55	30	14
11. The complexity of Montana's trapping regulations discourages participation.	15	27	57
12. Using fur for clothing is a wise use of a renewable resource.	49	37	14
13. Too many non-targeted animals are caught or killed in traps.	39	30	30
14. Trapping is cruel and inhumane.	40	44	16
15. Trapping promotes an understanding of species relationships in the natural environment.	38	34	28

[1]Due to rounding, not all statement percentages total 100.
[2]Original question: Do you approve or disapprove of efforts to abolish trapping in Montana?

Table 5. Responses of 519 Montana residents to questions on participation in wildlife-related recreation, 1993.

Question	% Yes	% No
Did you hunt in Montana in the last twelve months?	45	55
During the last twelve months, did you make a trip more than one mile from your home where YOUR MAJOR TRIP PURPOSE was viewing wildlife in Montana?	71	29
Did you trap in Montana in the last twelve months?	3	97

Table 6. Responses of 519 Montana residents to questions on interest in wildlife-related recreation, 1993.

Question	Interest (%)[1] Extremely	Very	Interested	Somewhat	Not at all
How interested are you in hunting in Montana in the future?	40	8	8	6	38
How interested are you in taking future trips in Montana where your major trip purpose would be to view wildlife?	51	21	17	6	5
How interested are you in trapping in Montana in the future?	4	3	6	8	78

[1]Due to rounding, not all question percentages total 100.

Table 7. Characteristics of 1993 sample. Sample size was 519 except where noted.

Characteristic	%[1]
Gender[2]	
Male	61
Female	39
Age	
18-24 years	31
25-44 years	35
45-64 years	20
65 or more years	14
Years of residence in Montana	
Less than 3 years	7
4-10 years	8
11-20 years	16
Over 20 years	67
Region of residence[3]	
West	52
Northeast	24
Southeast	24
Marital Status	
Never married	20
Married	65
Divorced	7
Widowed	6
Separated	2
Education	
Not a high school graduate	7
High school graduate	29
Some college	30
College graduate	22
Graduate degree or work	12
Household income/year[4]	
Less than $20,000	32
$20,000 - $40,000	39
$40,000 - $60,000	18
Over $60,000	11
Size of community raised in[5]	
Less than 2,500	47
2,500 - 9,999	5
10,000 - 49,999	22
50,000 - 99,999	25
More than 100,000	0
If a group member, type of group[6]:	
Nonconsumptive recreational	12
Hunting	38
Trapping	4
Nonrecreational environmental	14
Animal welfare	19
Multiple use or trade	9
Animal rights	4

[1]Due to rounding, not all characteristic percentages total 100.

[2]Weighted to 50%male:50%female for Tables 1-6.

[3]n = 473; see Figure 59.

[4]n = 425

[5]n = 444

[6]n = 241 (111 respondents did not belong to a group.)

APPENDIX B

Telephone Survey Questions and Belief Statements

HUNTING BELIEFS[1]

Definition:

Hunting is defined as: the legal harvesting of game animals by licensed individuals who are regulated and limited in their pursuit of that recreational activity.

A. Managing animal numbers to improve hunting is acceptable.

B. Hunting improves highway safety by reducing the potential for animal-vehicle collisions.

C. Hunting is a socially acceptable recreational pursuit for families in Montana.

D. Game animals killed by hunting replaces natural mortality.

E. Some predator populations, such as mountain lions, should be controlled through hunting because their prey species are limited.

F. Nongame species, such as the prairie dog, should not be hunted unless they threaten people's livelihood, safety, or health.

G. The opportunity to hunt should not be taken away from Montanans.

H. Without information from hunter harvests, it would be extremely difficult to manage wildlife.

I. Hunting is not acceptable if those animals would otherwise be killed by predators.

J. Hunting is an important cultural tradition in Montana.

K. Hunting keeps agricultural crops and/or forage from being severely damaged by wildlife.

L. Hunting prevents animal populations from maintaining a more natural age and sex composition.

---

[1] All belief statements were rated by respondents using a scale: Do you strongly agree (5), agree (4), are neutral (3), disagree (2), or strongly disagree (1) with the following statements?

M. The hunting of privately owned, confined wildlife (like game farm animals) is unacceptable in Montana.

N. Hunting in Montana's state parks should not be permitted.

O. The complexity of Montana's hunting regulations discourages participation in this activity.

P. A majority, over 50 percent, of hunters in Montana wound animals and do not retrieve them.

Qa. How important are socio-political considerations for FWP in setting hunting regulations?[2]

Qb. How important are biological considerations for FWP in setting hunting regulations?[3]

Qc. How important are economic influences on setting hunting regulations?[4]

R. Do you approve or disapprove of efforts to abolish hunting in Montana?

WILDLIFE VIEWING BELIEFS

Definition:

Wildlife includes mammals, birds, reptiles and amphibians. It includes game and nongame animals.

Wildlife viewing refers to observing wildlife near your home, while driving, in national parks, at designated wildlife viewing sites, or anywhere else inside Montana. It does not include observing animals at zoos, circuses, museums, aquariums or fairs.

A. When viewing wildlife, it is important to me to have few other people present.

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[2]Socio-political influence is part of the decision-making process. For instance, this is an influence from the legislation enacted for people or from a significant portion of society that desires that its interests be accommodated.

[3]Biological influence is based on biological scientific knowledge. For instance, the life requirements of the animal such as food and cover which affect the survivability of a wildlife populations, like a severe winter or a prolonged drought that affects the availability and quality of foods essential for wildlife survival.

[4]Economic influence will affect the incomes or earning potentials of residents for example due to the loss of jobs or provision of a new product that increases business.

B. Personal observations over the years of lower numbers or fewer wildlife species would decrease your enjoyment of life in Montana.

C. Private landowners should be reimbursed if they manage their property to increase public opportunities to view wildlife.

D. Providing designated wildlife viewing sites or guided tours does not adversely affect wildlife or their habitats.

E. Participation in wildlife viewing tends to make people less supportive of hunting.

F. Educating people about their role in the natural environment is possible through wildlife viewing.

G. FWP should emphasize the importance of wildlife habitat to other agencies to increase viewing opportunities on public land.

H. Enabling children to view wildlife is a good way to educate them about nature.

I. People who manage wildlife habitat on their property should be able to charge for wildlife viewing.

J. Viewing and being interested in wildlife are primary reasons why I enjoy being in Montana.

K. The abundance and diversity of wildlife species you observe reflects the health of the natural environment.

L. Feeding wildlife in order to view them may be harmful to those animals.

M. Many wildlife viewers unintentionally damage much of the vegetation (or habitat) that supports wildlife.

N. FWP needs to emphasize habitat improvement with private landowners to increase opportunities for viewing wildlife.

O. Animals become accustomed to the activities of wildlife viewers which makes those animals more dangerous to people.

P. Survival of animals may be affected by disturbance from wildlife viewers.

Q. Wildlife viewing is a worthwhile recreational pursuit for Montanan families.

TRAPPING BELIEFS

Definition:

Trapping is defined as a regulated, limited public activity where furbearers and nuisance wildlife are caught by licensed individuals.

A. Too many nontargeted animals are caught or killed in traps.

B. Because furbearer populations in Montana have economic value they should be more intensively managed because they have economic value.

C. Using fur for clothing is a wise use of a renewable resource.

D. Trapping is a socially unacceptable activity.

E. Trapping is an important cultural tradition in Montana.

F. Trapping for profit is morally unacceptable.

G. Leg-hold traps should be outlawed.[5]

H. Trapping near heavily used public trails or roads is safe.

I. Trapping is cruel and inhumane.

J. Trapping should not be used to control nuisance wildlife and/or to protect public health and safety.

K. Trapping promotes an understanding of species relationships in the natural environment.

L. All licensed trappers in Montana should complete a trapper education program.

M. Private ownership of furbearing animals for commercial profit (such as fur farms) is acceptable in Montana.

N. The complexity of Montana's trapping regulations discourages participation.

O. Do you approve or disapprove of efforts to abolish trapping in Montana?

[5]Leghold traps are defined as steel-jawed traps that hold an animal by a foot.

WILDLIFE VIEWING PARTICIPATION

1. During the last twelve months, did you make a trip more than one mile from your home where YOUR MAJOR TRIP PURPOSE was viewing wildlife in Montana? Do not include trips to zoos, circuses, museums or aquariums.

2. During the past twelve months, did you make a trip in Montana more than one mile from your home where viewing wildlife was NOT A MAJOR PURPOSE but on which you ALSO enjoyed seeing wildlife? Do not include trips to zoos, circuses, museums, or aquariums.

3. On a scale from 1 to 5 (where 1 is not at all interested and 5 is extremely interested) how interested are you in taking future trips in Montana where your major trip purpose would be to view wildlife?

HUNTING PARTICIPATION

1. Did you hunt at all in Montana during the last twelve months?

2. Since you did not hunt in Montana during the last year, did you do so...

3. On a scale from 1 to 5 (where 1 is not at all interested and 5 is extremely interested) how interested are you in hunting in Montana in the future?

TRAPPING PARTICIPATION

1. Did you trap in Montana during the last twelve months?

2. Not all trapping in Montana requires a permit, did you have a permit to trap?

3. Since you did not trap in Montana during the last year, did you do so...

4. On a scale from 1 to 5 (where 1 is not at all interested and 5 is extremely interested) how interested are you in trapping in Montana in the future?

DEMOGRAPHICS

1. How many years have you resided in Montana?

2. Are you a male or female?

3. What is your age?

SOCIO-ECONOMIC CHARACTERISTICS

1. What is your marital status?

2. What is the highest level of education you have completed?

3. What was your approximate annual household income in 1992, before taxes?

4. What is the zip code of your home residence?

5. Where did you live most of the time you were growing up?

6. Did either of your parents (or the adults who raised you) view wildlife?

7. Did either of your parents (or the adults who raised you) hunt?

8. Did either of your parents (or the adults who raised you) trap?

9. Do you belong to an organization that supports...
Nonconsumptive uses of wildlife (like the Audubon Society)
Multiple use environmental trades (like Montanans for Multiple Use or wood products).